

Listing of Claims:

Claims 1-5 (Canceled).

6. (Currently Amended) An image processing apparatus ~~using~~
~~an illumination apparatus, the illumination apparatus for a~~
microscope, comprising:

a light source for white light;

5 beam splitting means for splitting a light beam emitted from the light source into ~~two beams~~ a beam of first irradiation light and a beam of second irradiation light;

a first attenuation filter for adjusting an intensity of the first irradiation light;

10 a second attenuation filter for adjusting an intensity of the second irradiation light;

a first ~~wavelength selective member~~ excitation filter for selecting a wavelength of the first irradiation light;

15 ~~a first light amount adjusting member for adjusting an intensity of the first irradiation light;~~

a second wavelength selective member excitation filter for selecting a wavelength of the second irradiation light;

~~a second light amount adjusting member for adjusting an intensity of the second irradiation light;~~

20 beam synthesizing means for synthesizing the ~~beams~~ beam of the first irradiation light whose wavelength is selected and the

beam of the second irradiation light whose wavelength is selected, into a single light beam;

25 a first dichroic mirror for introducing the light beam synthesized by the beam synthesizing means in a direction ~~in which of a specimen; is irradiated and for transmitting light from the specimen,~~

an objective lens interposed between the first dichroic mirror and the specimen;

30 a second dichroic mirror, arranged to receive fluorescent light which has been emitted from the specimen and passed through the objective lens and the first dichroic mirror, for splitting the fluorescent light emitted from the specimen into a beam of first fluorescent light generated by excitation with the first irradiation light whose wavelength is selected by the first excitation filter and a beam of second fluorescent light generated by excitation with the second irradiation light whose wavelength is selected by the second excitation filter;
35 imaging elements

40 a first camera for imaging the first fluorescent light; from the specimen, which passes through the objective lens and the mirror, after the fluorescent light is separated into fluorescent light excited by a first wavelength and fluorescent light excited by a second wavelength;

45 a second camera for imaging the second fluorescent light;

a first fluorescence filter arranged between the second dichroic mirror and the first camera, to be used in combination with the first excitation filter;

a second fluorescence filter arranged between the second dichroic mirror and the second camera, to be used in combination with the second excitation filter; and

50 image processing means for performing synthesis processing of fluorescent images formed respectively imaged by the imaging element first and second camera;

55 wherein at least one of the first attenuation filter, the second attenuation filter, and the image processing means is used for image adjustment so that an intensity of the first fluorescent light and an intensity of the second fluorescent light in an ultimate synthesized image are at an equal level.

Claims 7-13 (Canceled).

14. (Currently Amended) An image processing apparatus according to claim 6, wherein ~~at least one each of the first light amount adjusting member~~ attenuation filter and the second ~~light amount adjusting member~~ attenuation filter is movable in 5 and out of a split optical path from the beam splitting means so as to be replaceable.

Claim 15-21 (Canceled) .

22. (Currently Amended) An image processing apparatus according to claim 6, wherein the ~~illumination apparatus~~ image processing apparatus further comprises wavelength distribution monitoring means for monitoring at least one of: a wavelength distribution of the first irradiation light and a wavelength distribution of the second irradiation light.

Claims 23-25 (Canceled) .

26. (Withdrawn - Currently Amended) An image processing apparatus according to claim ~~4~~~~or~~ 6, wherein the beam splitting means and the beam synthesizing means comprise dichroic mirrors.

Claim 27 (Canceled) .

28. (Withdrawn - Currently Amended) An image processing apparatus according to claim ~~4~~~~or~~ 6, wherein the beam splitting means and the beam synthesizing means comprise polarization beam splitters.

Claims 29-31 (Canceled) .

32. (Currently Amended) An image processing apparatus according to claim 6, wherein ~~at least one~~ each of the first ~~wavelength-selective member~~ excitation filter and the second ~~wavelength-selective member~~ excitation filter is movable in and out of an optical path split by the beam splitting means so as to be replaceable.

Claims 33-34 (Canceled).

35. (New) An image processing apparatus according to claim 6, wherein the beam splitting means comprises a semi-transmissive mirror.

36. (New) An image processing apparatus according to claim 6, wherein the beam synthesizing means comprises a semi-transmissive mirror.